Remarks/Arguments

The above-identified application has been carefully reviewed in light of the office action mailed November 30, 2007.

Without conceding the correctness of any of the Examiner's rejections, the present claims have been amended to facilitate obtaining an early allowance of the above-identified application. Applicant expressly reserves the right to seek patent protection for the original claims and any other claims supported by the specification in one or more later filed, related applications.

Specifically, claims 46 and 47 have been amended by changing the phrase "consisting of a product of claim 41" to the phrase "consisting of a product *of a process* of claim 41". Such amendments are fully consistent with the specification as filed.

The Examiner has rejected claims 46 and 47 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically, the Examiner states that each of claims 46 and 47 is an improper dependent claim, because each of claim 46 and claim 47 recites "a product of claim 41" and claim 41 is directed to a process.

In response, as mentioned above, applicant has amended claims 46 and 47 such that each of these claims now recites "a

product of a process of claim 41" and is now properly dependent on claim 41.

In view of this amendment, applicant submits that the rejection under 35 U.S.C. 112, second paragraph, has been overcome and requests this rejection be withdrawn.

The Examiner has rejected claims 26-28, 33-39, 41 and 42 under 35 U.S.C. 102(b) as being allegedly anticipated by Wood, U.S. Patent No. 3,892,870. Applicant traverses this rejection for at least the following reasons.

The present invention, as recited in independent claim 26, is generally directed to a process for preparing an alginate gel or low-methoxy pectate gel comprising:

Step 1: mixing water and a dispersion of alginate or low-methoxy pectate in an in-line dynamic mixer thereby producing an aqueous alginate sol or an aqueous low-methoxy pectate sol, then

Step 2: generating free gelling ions in the aqueous alginate sol or the aqueous low-methoxy pectate sol in the in-line dynamic mixer either a) by including in the water or in the dispersion of alginate or low-methoxy pectate a salt providing gelling ions when dissolved which is insoluble at neutral pH but soluble at acid pHs and by feeding an acid to the sol as an aqueous solution or as a dispersion or b) by feeding a dispersion of a low-solubility salt providing gelling ions to the sol, and

Step 3: allowing the aqueous alginate sol or the aqueous low-methoxy pectate sol to gel after the aqueous alginate sol or the aqueous low-methoxy pectate sol has left the in-line dynamic mixer.

Wood does not disclose, teach or suggest the present invention. For example, Wood does not even suggest a process for preparing an alginate gel or low-methoxy pectate gel comprising the steps of mixing water and a dispersion of alginate or low-methoxy pectate in an in-line dynamic mixer thereby producing an aqueous alginate sol or an aqueous low-methoxy pectate sol, and then generating free gelling ions in the aqueous alginate sol or the aqueous low-methoxy pectate sol in the in-line dynamic mixer, as recited in claim 26.

Applicant respectfully submits that the Examiner may have misunderstood the present invention, for example, by not fully appreciating an important feature of the present invention, that is, that the steps of mixing water and a dispersion of alginate or low-methoxy pectate in an in-line dynamic mixer thereby producing an aqueous alginate sol or an aqueous low-methoxy pectate sol, and then generating free gelling ions in the aqueous alginate sol or the aqueous low-methoxy pectate sol <u>in the same in-line dynamic mixer</u>.

As stated on page 2, lines 21-25 of the specification, applicant has discovered that alginate and low-methoxy pectate sols can be advantageously produced by adding a dispersion of

alginate or low-methoxy pectate to water in an in-line mixer and then free gelling ions can be generated in that sol in the same in-line mixer. The presently claimed processes are distinct from the process described in Wood which discloses only the use of a pre-prepared sol, and does not disclose the method or means by which the sol is made.

Page 3, line 20 to page 4, line 9 of the specification discloses that the present invention is particularly advantageous in that it provides a process for preparing alginate or low-methoxy pectate gels in which sols do not need to be prepared in advance. It can be appreciated by those of skill in the art that preparation of sol in advance inherently leads to the risk that not all the prepared sol will be needed and consequently will not be used in the production of gel and, ultimately, will be wasted. In contrast to Wood and other conventional processes, in the present processes, sol is produced in-line, for example, continuously in-line during the manufacture of the gel, so that costly waste is reduced or even eliminated. This is a significant advantage over processes that require the use of vessels to store sols prepared in advance. Among other disadvantages to storing pre-prepared sols, it is well known to those of skill in the art that cleaning of such vessels is a major task.

The present processes also offer another major advantage in that the processes require minimal equipment which can be operated without complex personnel training. Further, the

equipment can be used on site, for example, where the products are needed and/or used, rather than in off-site factories from which the products have to be transported to the site at which the products will be used. Among other disadvantages to prior art processes which require preparation of sol off-site is the inevitable risk that the amount of product delivered to the site will be more than or less than what is required.

With this in mind, applicant respectfully submits that the Examiner appears to not have fully appreciated that the presently claimed processes require the steps of (step 1) mixing water and a dispersion of alginate or low-methoxy pectate in an in-line dynamic mixer thereby producing an aqueous alginate sol or an aqueous low-methoxy pectate sol, then (step 2) generating free gelling ions in the aqueous alginate sol or the aqueous low-methoxy pectate sol in the in-line dynamic mixer.

An important aspect of the claimed processes is that, in step 1 and step 2, the mixing of the water and the dispersion to produce the aqueous sol and the generation of the free gelling ions occur in the same in-line dynamic mixer, as is clear from claim 26.

Again, in contrast to the presently claimed invention, Wood describes the generation of free gelling ions in a pre-prepared sol, and does not even discuss production of that sol. Thus applicant submits that Wood lacks a key aspect of the presently claimed invention.

The present invention has required significant technical development to produce the presently claimed processes which can be operated on-site by an un-skilled person (page 7, lines 13-19). In particular, persons of ordinary skill in the art will appreciate that for the production of good quality gels, it is advantageous that the gel manufacturing processes allows gelation to occur as much as possible in the absence of shear (page 2, lines 3-5). Indeed, it is surprising that the whole process can be carried out in a single in-line dynamic mixer, even with the resultant shear, and still produce good quality gels.

Wood is directed to an artificial fruit product formed from a gel matrix of calcium alginate or calcium low-methoxy pectate having dispersed therein gelled particles based on a second gelling agent. Wood discloses the formation of the fruit product being accomplished by dispersing particles of the gel based on the second gelling agent in an alginate or low-methoxy pectate sol and including, in the particles a salt containing the necessary ions (calcium ions) to bring about the gelling of the alginate or low-methoxy pectate and further including in the particles an acid to solubilize those ions. Those ions diffuse from the particles into the alginate or low-methoxy pectate sol and cause the gel matrix to form. Wood alternatively discloses the formation of the food product by mixing a solution of a calcium salt with an alginate or low-methoxy pectate sol simultaneously with or subsequent to the dispersion of the particles based on the second gelling agent. A calcium-

chelating compound is also included so as to prevent the gel matrix from forming too rapidly. Wood further discloses the use of an in-line mixer to achieve both the formation and dispersion of the particles based on the second gelling agent in the alginate or low-methoxy sol that is to subsequently form the gel matrix.

Wood does not even suggest a step of mixing water and a dispersion of alginate or low-methoxy pectate in an in-line dynamic mixer thereby producing an aqueous alginate sol or an aqueous low-methoxy pectate sol, and then generating free gelling ions in the aqueous alginate sol or the aqueous low-methoxy pectate sol in the same in-line dynamic mixer, as recited in claim 26.

In view of the above, applicant submits that claim 26 is not anticipated by Wood under 35 U.S.C. 102(b). Applicant further submits that claims 27 to 28, 33 to 39, 41 and 42 are also not anticipated by Wood under 35 U.S.C. 102(b), at least by virtue of their dependence on claim 26.

The Examiner has rejected claims 48 and 49 under 35 U.S.C. 103(a) as being unpatentable over Wood. Applicant traverses this rejection for at least the following reasons.

The present invention, as recited in claim 48, is directed to a system comprising an in-line dynamic mixer with feed points through which a) a dispersion of alginate or low-methoxy

pectate, b) water and c) a source of gelling ions can be separately fed to the mixer, feed points a) and b) being spaced sufficiently up-stream of feed point c) such that in use the alginate or low-methoxy pectate forms an aqueous sol or a low-methoxy pectate sol before alginate or low-methoxy pectate comes into contact with the gelling ions, and a receptacle to receive the aqueous alginate sol or the low-methoxy pectate sol, the receptacle being such that the aqueous alginate sol or the low-methoxy pectate sol is quiescently maintained to produce an alginate gel or low-methoxy pectate gel.

As stated above, it is a particularly advantageous aspect of the present invention that the sol does not need to be prepared in advance, but is produced in-line, for example, continuously in-line, in the same mixer as the generation of the free gelling ions.

As discussed with regard to the rejection of the claims under 35 U.S.C. 102(b), Wood is directed to an artificial fruit product formed from a gel matrix of calcium alginate or calcium low-methoxy pectate having dispersed therein gelled particles based on a second gelling agent. Wood discloses the use of an in-line mixer to achieve the formation and dispersion of particles based on a second gelling agent in an alginate or low-methoxy sol that subsequently forms the gel matrix.

Wood does not disclose, teach or suggest the present invention recited in claim 48. For example, Wood does not

disclose, teach or even suggest a system comprising an in-line dynamic mixer with feed points through which a) a dispersion of alginate or low-methoxy pectate, b) water and c) a source of gelling ions can be separately fed to the same mixer. As stated above, it is a particularly advantageous aspect of the present invention that the alginate sol or methoxy pectate sol does not need to be prepared in advance of the mixing with the source of gelling ions. The sol is produced in-line, for example, continuously in-line.

In contrast to the presently claimed invention, Wood does not contain any information about the production of the sol. The mere fact that Wood discloses the presence of a sol cannot be sufficient to render equipment for the production of that sol obvious. Thus, the teaching of Wood that particles based on a second gelling agent could be formed and dispersed in an alginate or low-methoxy pectate sol using an in-line mixer would not suggest to the person of ordinary skill in the art that an in-line dynamic mixer could be used to combine an alginate or low-methoxy dispersion with water to form an aqueous alginate sol or aqueous low-methoxy pectate sol.

The Examiner's conclusion that the present systems are obvious in view of Wood is based on improper hindsight, in that it requires reference to applicant's own teachings. Indeed, Wood specifically teaches away from the present invention by disclosing generating gelling ions in a pre-prepared sol without any reference to the production of that sol.

In view of the above, applicant submits that the claim 48 is patentable over Wood under 35 USC 103(a). Applicant further submits that claim 49 is patentable over Wood under 35 U.S.C. 103(a) at least by virtue of its dependence on claim 48.

The Examiner has rejected claims 29-32 as unpatentable under 35 U.S.C. 103(a) over Wood in view of Nussinovitch *et al.* (U.S. Patent No. 6,299,915). For the following reasons, applicant traverses this rejection.

Again, the present invention is directed towards a process which includes a step of mixing water and a dispersion of alginate or low-methoxy pectate in an in-line dynamic mixer thereby producing an aqueous alginate sol or an aqueous low-methoxy pectate sol, in which a dispersant is used to prepare the dispersion of the alginate or low-methoxy pectate, which dispersant is an anhydrous liquid dispersant which disperses or dissolves in water, and further includes the step of generating free gelling ions in the aqueous alginate sol or the aqueous low-methoxy pectate sol in the in-line dynamic mixer, as recited in claim 26 and claim 29.

As stated above, it is a particularly advantageous aspect of the present invention that the sol does not need to be prepared in advance.

As discussed above, Wood does not disclose, teach or

suggest the present invention. Further, Nussinovitch *et al.* does not supply the substantial deficiencies apparent in Wood so as to make obvious the presently claimed invention.

Nussinovitch *et al.* is directed to a hydrocolloid protective coating for food and/or agricultural products. Nussinovitch *et al.* discloses the combination of a gelation solution such as alginate and a gelation-inducing agent solution such as calcium chloride.

Nussinovitch *et al.* does not disclose, teach or suggest a process comprising the step of mixing water and a dispersion of alginate or low-methoxy pectate in an in-line dynamic mixer thereby producing an aqueous alginate sol or an aqueous low-methoxy pectate sol, and further comprising the step of generating free gelling ions in the aqueous alginate sol or the aqueous low-methoxy pectate sol in the in-line dynamic mixer, as recited in claim 26.

Neither Nussinovitch *et al.* nor Wood discloses, teaches or suggests the present invention, which includes production of a sol and the generation of the free gelling ions occuring in the same, in-line, dynamic mixer. Thus, the combination of Nussinovitch *et al.* and Wood does not render the present invention obvious.

In view of the above, applicant submits that the claim 29, which is dependent on claim 26, is patentable over Wood and

Nussinovitch *et al.* under 35 USC 103(a). Applicant further submits that claims 30-32 are patentable over Wood and Nussinovitch *et al.* under 35 USC 103(a) at least by virtue of their dependence on claim 29.

Claims 40 and 43-47 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Wood in view of Dugger *et al.* (WO 98/47392) and Mann (U.S. Patent No. 5,718,894). Applicant traverses this rejection for at least for the following reasons.

Claims 40 and 43-47 are each ultimately dependent on claim 26 discussed hereinabove. Applicant resubmits the argument and remarks presented hereinabove with regard to Wood. Applicant further submits that neither of Dugger *et al.* nor Mann supply the substantial deficiencies apparent in Wood so as to render the claims obvious.

As discussed above, Wood is directed to an artificial fruit product formed from a gel matrix of calcium alginate or calcium low-methoxy pectate having dispersed therein gelled particles based on a second gelling agent. Wood discloses the formation of the food product by dispersing particles of the gel based on the second gelling agent in an alginate or low-methoxy pectate sol.

As also discussed above, Wood does not disclose, teach or suggest a process, which includes a step of mixing water and a dispersion of alginate or low-methoxy pectate in an in-line

dynamic mixer thereby producing an aqueous alginate sol or an aqueous low-methoxy pectate sol and further includes the step of generating free gelling ions in the aqueous alginate sol or the aqueous low-methoxy pectate sol in the in-line dynamic mixer as recited in claim 26.

Dugger *et al.* discloses a manufactured animal food article, which contains at least one edible component and an edible gel carrier. Dugger *et al.* discloses that the animal food article can be manufactured by mixing the ingredients in water that is heated sufficiently to form the gel and then extruding, cutting or moulding the gel to produce the required shape. Dugger *et al.* discloses that algin may be a suitable gelling agent.

Dugger *et al.* does not disclose, teach or suggest a process comprising mixing water and a dispersion of alginate or low-methoxy pectate in an in-line dynamic mixer thereby producing an aqueous alginate sol or an aqueous low-methoxy pectate sol and further comprising generating free gelling ions in the aqueous alginate sol or the aqueous low-methoxy pectate sol in the in-line dynamic mixer, as recited in claim 26.

Mann discloses a formulation and use of microorganisms in treating livestock.

Mann does not appear to disclose how the formulation is to be administered to treat livestock. Moreover, like Wood and Dugger *et al.*, Mann does not disclose, teach or suggest a

process comprising mixing water and a dispersion of alginate or low-methoxy pectate in an in-line dynamic mixer thereby producing an aqueous alginate sol or an aqueous low-methoxy pectate sol and further comprising generating free gelling ions in the aqueous alginate sol or the aqueous low-methoxy pectate sol in the in-line dynamic mixer, as recited in claim 26.

None of Dugger *et al.*, Mann nor Wood discloses, teaches or suggests an important aspect of the presently claimed invention, namely the production of sol and the generation of free gelling ions occurring in the same in-line dynamic mixer. For at least these reasons, the combination of Dugger *et al.*, Mann and Wood does not render the present invention obvious.

In view of the above, applicant submits that the claim 40 and 43-47, each being dependent on claim 26, are patentable over Wood, Dugger *et al.* and Mann under 35 U.S.C. 103(a).

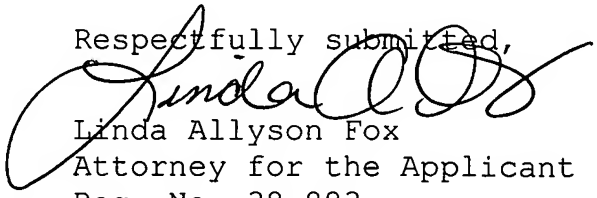
In summary, there is no disclosure, teaching, or even suggestion in any of the cited references to suggest an important feature or aspect of the present invention, namely that an aqueous alginate or aqueous low-methoxy pectate sol is produced in-line, by mixing water and a dispersion of alginate or low-methoxy pectate in an in-line dynamic mixer, and that free gelling ions are generated in that aqueous alginate sol or aqueous low-methoxy pectate sol in the same in-line dynamic mixer.

In addition, applicant submits that each of the present dependent claims is separately patentable over the prior art in that the prior art does not disclose, teach or suggest the present processes, systems and feedstock including the addition feature or features recited in any of the present dependent claims. Therefore, applicant submits that each of the present claims is separately patentable over the prior art.

In conclusion, applicant has shown that the present claims, i.e. claims 26 through 49, are not anticipated by, and are unobvious from and patentable over each of the references alone and in combination. Further, applicant submits that the rejection based on 35 U.S.C. 112 has been overcome by the amendments made to claims 46 and 47. Applicant submits therefore that the above-identified application is in condition for allowance and respectfully requests the Examiner to pass the application to issuance at an early date.

Should any matters remain unresolved, the Examiner is requested to call applicant's attorney at the telephone number given below.

Respectfully submitted,



Linda Allyson Fox
Attorney for the Applicant
Reg. No. 38,883
Stout, Uxa, Buyan & Mullins, LLP
4 Venture, Suite 300
Irvine, CA 92618
(949) 450-1750
Facsimile (949)450-1764

LAF